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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/510,417

Applicant(s)

KITAHARA ET AL.

Examiner

PATRICK HAMO

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 10, 2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiage et al (JP 8-189468) in view of Masamura (6024366) and further in view of Oh et al. (2003/0206817).

In re claim 1, Oshiage et al teaches a piston pump capable of use as a blood pressure measuring device comprising: a cylindrical cylinder (7) having a cylinder head (8, 10); a piston (14) reciprocating inside the cylinder and along the inner wall of the cylinder via a seal; a suction port (16) through which gas is sucked into the pump

chamber; the pump chamber defined between the cylinder and piston; an exhaust port (22) through which gas exhausts from the gas chamber; wherein the piston pump sucks the gas through the suction port and discharges the gas through the exhaust port as the volume of the pump chamber is changed by reciprocating motion of the piston; wherein the suction port is arranged at a top of the piston with a suction valve, which opens as the volume of the pump chamber is increased; wherein the exhaust port is arranged at a top of the cylinder with an exhaust valve, which opens when the volume of the pump chamber is decreased. Oshiage appears to be silent to how the cylinder head is attached to the cylinder and how the suction valve is fixed to the piston.

Masamura teaches a cylinder head (28) attached to a cylinder (24) by welding. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have attached the cylinder head of Oshiage to the cylinder by welding as taught by Masamura merely to provide a strong fluid tight connection for the head.

Oh teaches a suction valve assembly for a reciprocating compressor whereby the suction valve is fixed to the cylinder by a bolt 60 through a hole 113 for receiving the bolt. It would have been obvious to one of ordinary skill in the art to have modified the nominally attached suction valve of the pump of the art above with the fixed suction valve of Oh.

In re the limitation that an inner diameter of the cylinder does not exceed 20mm such that the piston can be utilized in a blood pressure measuring device, this constitutes a change in size that fails to patentably distinguish over the art of record as it is just a scaling down of the art of record. See MPEP 2144.04(4)(a).

In re claim 2, please note valve 21 is on a top face of the piston in Oshiage.

In re claim 4, broadly interpreted, Oshiage teaches the piston having an opening (14) communicating with the suction port; wherein the opening is arranged outside the pump chamber so as to allow air sucked through the suction port into the pump chamber to pass a plenum capable of storing air to communicate with the opening; wherein the plenum is encompassed by an enclosure (1) having a plenum suction port (A); wherein the enclosure is a housing having a base portion fixed to the cylinder such that the base portion holds a motor (2).

IN re claim 7, Oshiage teaches a drive assembly for a having a piston engaging a coupling member (5) in such a manner that the coupling member is capable of turning in a circumferential direction thereof; and wherein the coupling member is ring shaped and connected to a connecting member (14) such that the engaged piston is reciprocated inside the cylinder.

IN re claim 10, Oshiage teaches a top plenum (10) defined by a top enclosure fixed to the top portion of the cylinder and a motor housing (1A, 1) fixed at a position spaced apart by a predetermined distance from the top portion such that the cylinder is connected and fixed to at least a part of the motor housing; wherein the motor housing is composed of a base portion (1) fixed to the cylinder such that the base portion holds a motor for driving the piston and a cover portion (bottom housing portion of figure 1) disposed along the base portion such that the cover portion fastens the motor by sandwiching the motor with the base portion; wherein the cover portion and the base portion are engaged with a connecting mechanism capable of engagement and

disengagement. Please note that anything connected to the housing in Oshiage can be considered the connecting mechanism because applicant has not provided any relationship with structure. For example, the motor can be considered the connecting mechanism because it is capable of being connected and disconnected from the housing.

Claims 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiage et al (JP 8-189468) in view of Masamura (6024366) and further in view of Credle et al (6193109).

In re claim 3, Oshiage teaches an exhaust valve at a top face of a cylinder outside of the pump chamber, but lacks the teaching of the valve being umbrella shaped.

Credle teaches an umbrella shaped inlet (30) and exhaust valve (40). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have provided the exhaust valves of Oshiage with umbrella shaped valves merely as a design choice and to provide a simple cost effective valve structure.

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Credle et al (6193109) in view of Oshiage et al (JP 8-189468) and further in view of Oh et al. (2003/0206817).

IN re claim 5, Credle teaches a piston pump including: a cylindrical cylinder (12) having a top portion (near 30); a piston (50) reciprocating inside the cylinder; a suction port (above 30) through which fluid is sucked into a pump chamber (14); an exhaust

port (above 40) through which fluid is discharged from the pump chamber; wherein the piston pump sucks the fluid from the suction port and discharges the fluid through the exhaust port as a volume of the pump chamber is changed by reciprocating motion of the piston; wherein the suction port is arranged at the top portion of the cylinder with a suction valve (30), which opens when the volume of the pump chamber is increased; and the exhaust port is arranged at the piston with an exhaust valve (40), which is umbrella shaped and is arranged outside the pump chamber and opens when the volume of the pump chamber is decreased.

Credle lacks the teaching of pumping a gas.

Oshiage teaches a similar pumping arrangement to pump gas.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have provided the assembly of Credle to pump gas as taught by Oshiage merely as a substitution of fluids. The structure of Credle is capable of pumping a gas. Further, whether a pump pumps a liquid or a gas is a matter of design choice.

Oh teaches a suction valve assembly for a reciprocating compressor whereby the suction valve is fixed to the cylinder by a bolt 60 through a hole 113 for receiving the bolt. It would have been obvious to one of ordinary skill in the art to have modified the nominally attached suction valve of the pump of the art above with the fixed suction valve of Oh.

In re the limitation that an inner diameter of the cylinder does not exceed 20mm such that the piston can be utilized in a blood pressure measuring device, this

constitutes a change in size that fails to patentably distinguish over the art of record as it is just a scaling down of the art of record. See MPEP 2144.04(4)(a).

IN re claim 6, Credle teaches an umbrella shaped suction valve (30) inside the pump chamber.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiage et al (JP 8-189468) in view of Masamura (6024366) and further in view of Spulgis (5188519).

IN re claim 8, the assembly of Oshiage as modified by Masamura lacks the teaching of the piston assembly claimed. Spulgis teaches a piston (14, 26) with a recess portion formed continuously in the circumferential direction of the piston and engaged with a coupling member (38), the recess portion including at least a part of a first predetermined spherical surface; wherein the coupling member has a projection portion formed continuously in the circumferential direction such that the projection portion corresponds to the recess portion, the projection portion including at least a part of a predetermined second spherical surface to engage with the recess such that the projection portion is capable of turning in the circumferential direction and in an axial direction.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have provided the assembly of Oshiage as modified by Masamura with the piston connection assembly taught by Spulgis merely to provide flexible connection for the piston.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiage et al (JP 8-189468) in view of Masamura (6024366) and further in view of Hatridge (3931755).

Both Oshiage and Masamura lack the teaching of a self-lubricating material on the piston. Hatridge teaches a piston with a self-lubricating material. (Col. 4 lines 63-66).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have modified the piston pump of Oshiage to include a self lubricating piston as taught by Hatridge merely to reduce friction within the pump thus increasing the efficiency.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiage et al (JP 8-189468) in view of Masamura (6024366) and further in view of US Patent No. 4,343,314 to Sramek (Sramek).

In re claim 11, Oshiage and Masamura teach the piston pump according to claim 1 (see claim 1 rejection above) but fail to teach the following which is taught by Sramek: wherein the piston pump is connected to a blood pressure monitor (see Fig. 1 and Claim 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the piston pump apparatus of Oshiage et al/ Masamura in the blood pressure monitoring system of Sramek to achieve a blood pressure detecting system with a better precision (the measurements reflect the instantaneous blood pressure, column 2, line 5), and autonomous pumping means by having a motor based

pump system. Please note that applicant has not claimed how the motor / pump are arranged in the blood pressure monitor.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,082,244 to Sigel et al.(Sigel) in view of US Patent No. 5,848,879 to Hansson (Hansson) and further in view of Martin et al. (5,847,264).

In re claim 13, Sigel teaches a method of producing a piston pump (10) including a cylindrical cylinder (14), a piston (20) reciprocating inside the cylinder; a suction port (38) through which gas sucked into a pump chamber defined by the cylinder and the piston passes and an exhaust port (64) through which the gas discharged from the pump chamber passes; the method comprising the steps of: producing a piston pump pre-assembly comprising the cylinder and a cylinder top portion in which the exhaust port is formed; (Column 5, lines 5-18) producing a piston pump by further assembling components to the piston pump pre-assembly (Column 5, lines 5-12). However, Sigel fails to teach conducting a leakage inspection of the piston pump pre-assembly which is taught by Hansson (Column 3, lines 47-56).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of inspecting fluid leakage from the piston apparatus disclosed by Hansson in the piston producing method of Sigel to achieve a more reliable and leakage free system by doing a prior inspection of the piston to identify and eliminate leakage. Please note that by providing fluid during the leakage test recited by Hansson, some pressurization must take place.

Neither Sigel nor Hansson teach that the leakage test constitutes measuring a change of pressure. However, Martin teaches a leakage test that includes measuring pressure loss (column 9, lines 1-20). It would have been obvious to one of ordinary skill in the art to substitute the leakage test system of Martin for the nominal leakage testing called for by Hansson to achieve the predictable result of testing the leakage of the pump in construction.

Claims 15-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiage et al (JP 8-189468) in view of Spulgis (5188519).

In re claims 15-16, Oshiage et al teaches a piston pump capable of use as a blood pressure measuring device comprising: a cylindrical cylinder (7) having a cylinder head (8, 10); a piston (14) reciprocating inside the cylinder; a suction port (16) through which gas is sucked into the pump chamber; the pump chamber defined between the cylinder and piston; an exhaust port (22) through which gas exhausts from the gas chamber; wherein the piston pump sucks the gas through the suction port and discharges the gas through the exhaust port as the volume of the pump chamber is changed by reciprocating motion of the piston; wherein the suction port is arranged at a top of the piston with a suction valve, which opens as the volume of the pump chamber is increased; wherein the exhaust port is arranged at a top of the cylinder with an exhaust valve, which opens when the volume of the pump chamber is decreased. Oshiage appears to be silent to how the piston is connected.

Spulgis teaches a connecting member (26, 38) for attaching to a piston that is capable of turning in a circumferential direction, a stem portion 26 of the connecting member including a hollow chamber that is not sealed off such that at least some air passes therethrough. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have provided the piston assembly of Oshiage with the coupling member of Spulgis merely to provide a connection that is flexible.

In re claim 18, the claimed references are recited as mentioned in the rejection of claim 4 above.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshiage et al (JP 8-189468) in view of Spulgis (5188519) and further in view of Credle et al (6193109).

In re claim 3, Oshiage teaches an exhaust valve at a top face of a cylinder outside of the pump chamber, but lacks the teaching of the valve being umbrella shaped.

Credle teaches an umbrella shaped inlet (30) and exhaust valve (40).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to have provided the exhaust valves of Oshiage with umbrella shaped valves merely as a design choice and to provide a simple cost effective valve structure.

Response to Arguments

Applicant's arguments filed February 10, 2009 have been fully considered but they are not persuasive.

The limitation added to claims 1 and 5 that the piston slides on an inner wall of the cylinder fails to patentably distinguish over the cited art. A piston is defined by its sealing engagement with the cylinder with which it reciprocates so that the compression chamber is an expansible chamber only by the reciprocation of the piston and operation of any valving. If this relationship was not present, it would be improper to call the reciprocating member a piston. Therefore, while Oshiage discloses the lip seal as an independent part separate from what he calls the piston proper, one of ordinary skill in the art would understand that the lip seal is a critical part of the "piston" when it comes to operation in a reciprocating pump.

The limitation added to claims 1 and 5 that the piston has a hole at a center thereof in order to fix the suction valve is overcome by the newly found reference to Oh et al. discussed in the rejections above.

The limitation added to claims 1 and 5 that an inner diameter of the cylinder does not exceed 20mm such that the piston can be utilized in a blood pressure measuring device constitutes a change in size that fails to patentably distinguish over the art of record as it is just a scaling down of the art of record. See rejection above and MPEP 2144.04(4)(a).

The limitation added to claim 13 is overcome by the newly found reference to Martin et al. discussed in the rejection above.

The limitation added to claim 15 that the coupling member has a hollow portion through which air passes files to patentably distinguish over the cited art. Spulgis teaches a cylindrically ring-shaped stem 26 that includes a hollow portion for receiving the ball 38. This hollow portion is not taught as being sealed off entirely, and even if it were, at least some air would pass through this hollow portion.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICK HAMO whose telephone number is (571)272-3492. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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